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Supplemental Material

Long-Term Air Pollution and Traffic Noise Exposures and Mild Cognitive Impairment in Older Adults: A Cross-Sectional Analysis of the Heinz Nixdorf Recall Study

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Table S1. Spearman correlations* between air pollution (ESCAPE-LUR) and noise variables (r_s)

Variable	**$PM_{2.5}$ ($\mu g/m^3$)**	**$PM_{2.5}$ absorbance ($10^{-5}/m$)**	**PMcoarse ($\mu g/m^3$)**	**PM_{10} ($\mu g/m^3$)**	**NO_2 ($\mu g/m^3$)**	**NOx ($\mu g/m^3$)**	**Traffic load at major roads (veh*m/d)**	**L_{DEN} (dB(A))**
$PM_{2.5}$ absorbance ($10^{-5}/m$)	0.89							
PMcoarse ($\mu g/m^3$)	0.69	0.74						
PM_{10} ($\mu g/m^3$)	0.88	0.89	0.70					
NO_2 ($\mu g/m^3$)	0.65	0.62	0.46	0.54				
NOx ($\mu g/m^3$)	0.63	0.52	0.42	0.51	0.93			
Traffic load at major roads (veh*m/d)	0.20	0.39	0.20	0.20	0.53	0.34		
L_{DEN} (dB(A))	0.30	0.48	0.32	0.31	0.37	0.29	0.59	
L_{NIGHT} (dB(A))	0.30	0.48	0.32	0.32	0.36	0.28	0.57	0.99

*All the correlations are at 0.001 significance level

Table S2. Association of noise with MCI[a], OR (95% CI)

	L_{DEN} continuous (per IQR=14.2 dB(A))	**L_{NIGHT} continuous (per IQR=13.6 dB(A))**	**L_{DEN} (threshold 65 dB(A), per 10 dB(A))**	**L_{NIGHT} (threshold 50 dB(A), per 10 dB(A))**
Overall MCI	1.10 (0.94, 1.28)	1.09 (0.94,1.27)	1.89 (1.10, 3.25)	1.35 (1.00, 1.82)
Amnestic MCI	1.15 (0.94, 1.40)	1.13 (0.93, 1.38)	2.39 (1.28, 4.45)	1.47 (1.02, 2.12)
Non-amnestic MCI	1.06 (0.87, 1.30)	1.06 (0.87, 1.30)	1.34 (0.60, 2.98)	1.22 (0.81, 1.85)

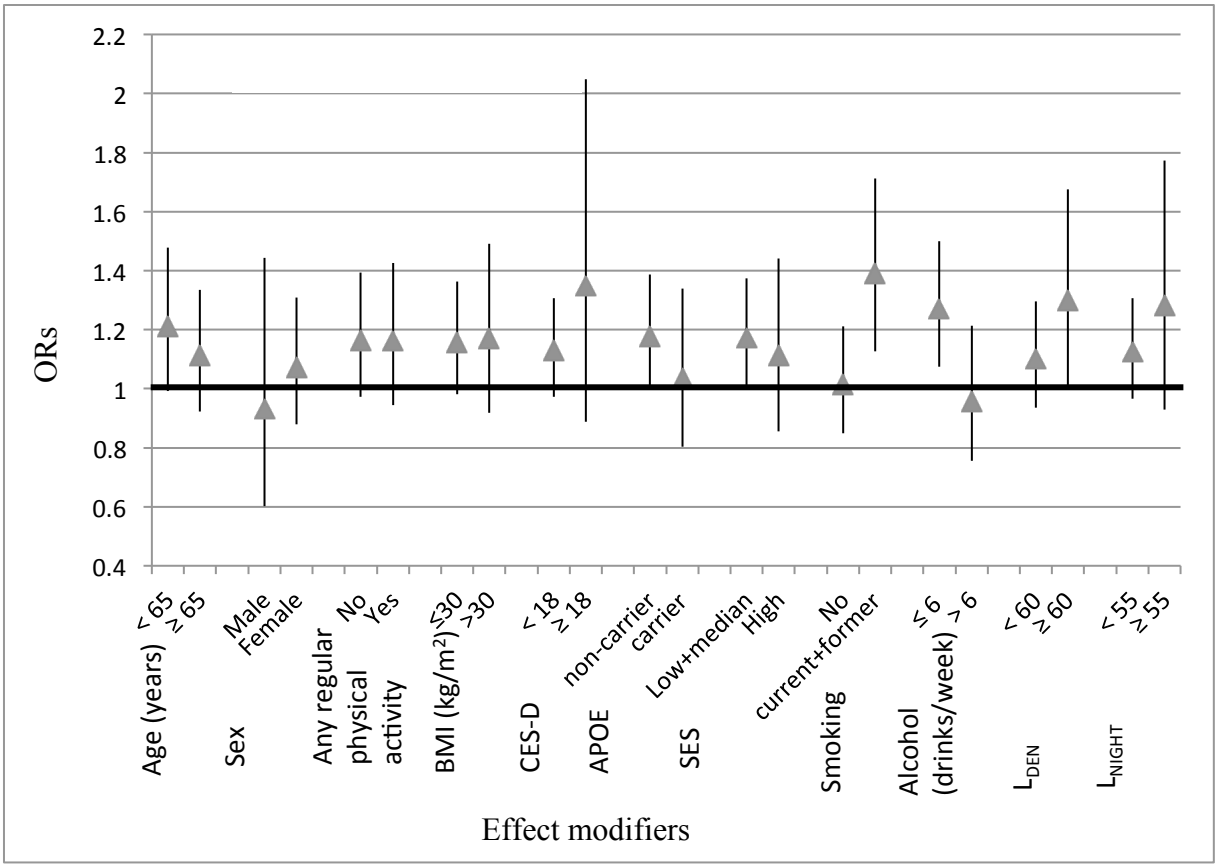
[a]Adjusted for age, sex, SES, alcohol consumption, smoking status, self-reported ETS, any regular physical activity, BMI

Table S3. Association between L_{DEN} (categorical) and overall MCI[a]

L_{DEN}, dB(A)	**OR (95% CI)**
< 45	Reference
45 - 55	0.98 (0.73,1.32)
55 - 65	1.08 (0.78,1.49)
65 - 75	1.21 (0.84,1.74)
> 75	1.77 (0.61,5.07)

[a]Adjusted for age, sex, SES, alcohol consumption, smoking status, self-reported ETS, any regular physical activity, BMI

A.


ORs
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
< 65
≥ 65
Age (years)
Male
Female
Sex
No
Yes
Any regular physical activity
≤30
>30
BMI (kg/m²)
< 18
≥ 18
CES-D
non-carrier
carrier
APOE
Low+median
High
SES
No
current+former
Smoking
≤ 6
> 6
Alcohol (drinks/week)
< 60
≥ 60
L_{DEN}
< 55
≥ 55
L_{NIGHT}
Effect modifiers

B.

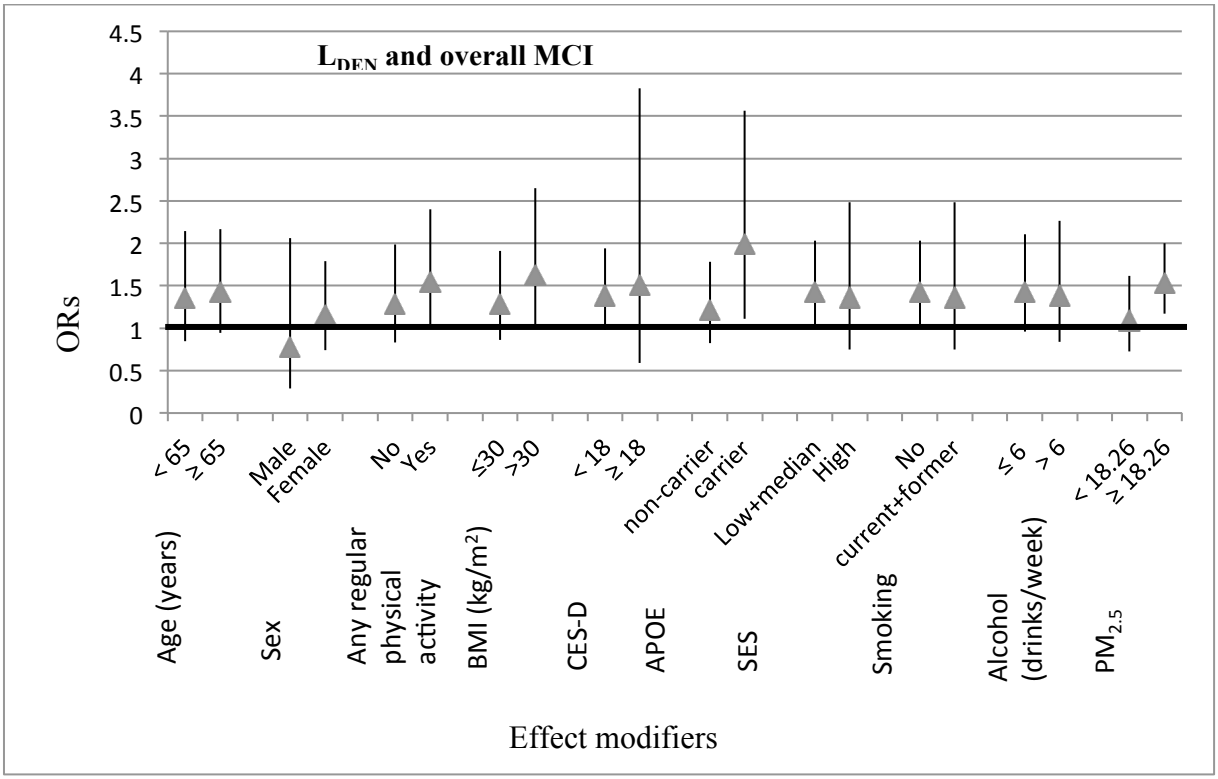

L_{DEN} and overall MCI
ORs
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
< 65
≥ 65
Age (years)
Male
Female
Sex
No
Yes
Any regular physical activity
≤30
>30
BMI (kg/m²)
< 18
≥ 18
CES-D
non-carrier
carrier
APOE
Low+median
High
SES
No
current+former
Smoking
≤ 6
> 6
Alcohol (drinks/week)
< 18.26
≥ 18.26
$PM_{2.5}$
Effect modifiers

Figure S1. Effect modification of association between exposures and overall MCI. Panel A: Associations of $PM_{2.5}$ (per IQR) with overall MCI. Panel B: Associations of L_{DEN} (per 10 dB(A)) with overall MCI. Main model adjusted for age, sex, SES, alcohol consumption, smoking status, self-reported ETS, any regular physical activity and BMI.